

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization International Bureau



(43) International Publication Date
7 July 2005 (07.07.2005)

PCT

(10) International Publication Number
WO 2005/062360 A1

(51) International Patent Classification⁷: **H01L 21/3065**

(21) International Application Number:
PCT/KR2004/003387

(22) International Filing Date:
22 December 2004 (22.12.2004)

(25) Filing Language: **Korean**

(26) Publication Language: **English**

(30) Priority Data:
10-2003-0094412
22 December 2003 (22.12.2003) **KR**

(71) Applicant (for all designated States except US): **ADAPTIVE PLASMA TECHNOLOGY CORPORATION** [KR/KR]; 1 Yeongtong-dong, Yeongtong-gu, Suwon-si, Gyeonggi-do 443-808 (KR).

(72) Inventors; and
(75) Inventors/Applicants (for US only): **PARK, Hee Yong** [KR/KR]; 2nd Floor Sun Technoville, 5-27 Mangpo-dong, Paldal-gu, Suwon-si, Gyeonggi-do 442-400 (KR). **KIM, Jin Tai** [KR/KR]; 124-1206 Hanwha, 1027 Jung 4-dong, Wonmi-gu, Bucheon-si, Gyeonggi-do 420-024 (KR). **LEE, Kyu Ha** [KR/KR]; 2nd Floor Sun Technoville, 5-27 Mangpo-dong, Paldal-gu, Suwon-si, Gyeonggi-do 442-400 (KR). **PARK, Kwan Tae** [KR/KR]; 2nd Floor Sun Technoville, 5-27 Mangpo-dong, Paldal-gu, Suwon-si,

Gyeonggi-do 442-400 (KR). **OH, Sang Young** [KR/KR]; 501ho, 1180-2 Maetan 3-dong, Paldal-gu, Suwon-si, Gyeonggi-do 442-373 (KR). **JANG, Hwi Gon** [KR/KR]; 501ho, 1180-2 Maetan 3-dong, Paldal-gu, Suwon-si, Gyeonggi-do 442-373 (KR).

(74) Agent: **AJU PATENT & LAW FIRM**; 12th Floor, Poonglim Building, 823-1 Yeoksam-dong, Kangnam-gu, Seoul 135-784 (KR).

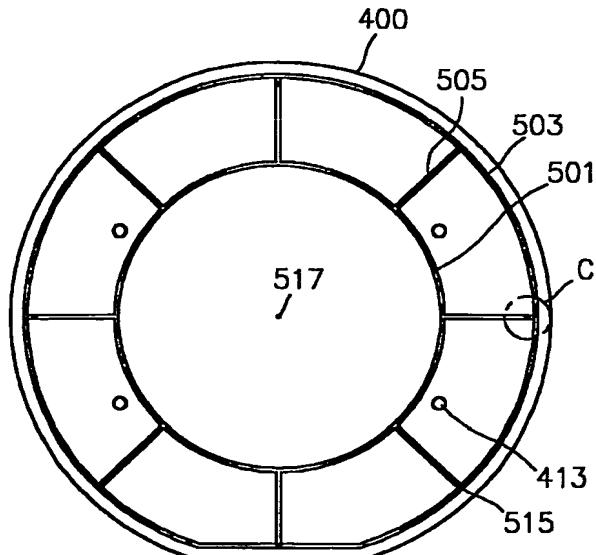
(81) Designated States (unless otherwise indicated, for every kind of national protection available): **AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.**

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): **ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).**

Published:
— with international search report

[Continued on next page]

(54) Title: ELECTROSTATIC CHUCK AND CHUCK BASE HAVING COOLING PATH FOR COOLING WAFER



(57) Abstract: Disclosed herein is an electrostatic chuck having a cooling channel formed at the surface thereof. The electrostatic chuck comprises a chuck base for supporting a wafer, a dielectric film mounted on the chuck base, the dielectric film having an electrode for supplying direct current voltage to provide an electrostatic force necessary to fix the wafer, the electrode being disposed in the dielectric film, and a cooling channel for supplying refrigerant to the dielectric film to control the temperature of the wafer. The cooling channel comprises at least two first cooling channel parts formed at the surface of the dielectric film corresponding to the edge part of the wafer such that the first cooling channel parts form concentric circles, second cooling channel parts formed at the surface of the dielectric film such that the first cooling channel parts are connected to each other through the second cooling channel parts, first through channels formed through the dielectric film for supplying the refrigerant to the first and second cooling channel parts, and a second through channel formed through the center of the dielectric film for supplying the refrigerant to the center of the wafer.

Express Mail No. EV809338398US

WO 2005/062360 A1



— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.